

2.1 Carrizo Plain

The Carrizo Plain is a high-valley west of the San Joaquin Valley and east of the Pacific Ocean. This isolated valley runs parallel to the San Andreas Fault roughly along a northwest-southeast orientation. A meteorology tower, radar wind profiler, and Doppler sodar were deployed on a privately-owned ranch at 10525 Bitterwater Road, Santa Margarita, CA 93453 (Figure 2). This was a remarkably idle site for surface and upper-air meteorological monitoring with few obstructions. The only exception was a one-storey residential home and a few trees west of the tower and the remote sensors. Acoustically (with respect to the Doppler sodar), this site was very quiet with average noise levels less than 50 dB. The tower was placed approximately 30 m northeast of the electronics trailer which housed the electronics and computers needed to operate the remote sensors.



Figure 2. Carrizo Plain meteorology tower, radar wind profiler, and Doppler sodar.

The flat-bed trailer which carried the sodar and radar antennas was oriented exactly north-south (0° - 180°). The trailer and antennas were leveled to within $\pm 0.2^\circ$ in accordance to U. S. EPA guidance and procedures (1995, 2000). The two oblique-angle (14.87° from the vertical) acoustic sodar beams which are used to derive the horizontal wind components (U and V) were oriented to

the south (180°) and east (90°), respectively. A diagnostic test was executed three times on the sodar during installation process to identify any faulty acoustic transducers. Eight out of 120 acoustic transducers did not function properly (Figure 3). Broken signal lines between the data acquisition system and the antenna are responsible for the individual transducer malfunctions. However, phased-array sodar can still acquire reliable data even if 10% of the transducers do not function (assuming they are randomly distributed). The radar antenna was extensively tested and was found to operate within normal parameters. Software acquisition versions for the sodar and radar were 3.0.33 and POP4.x, respectively.

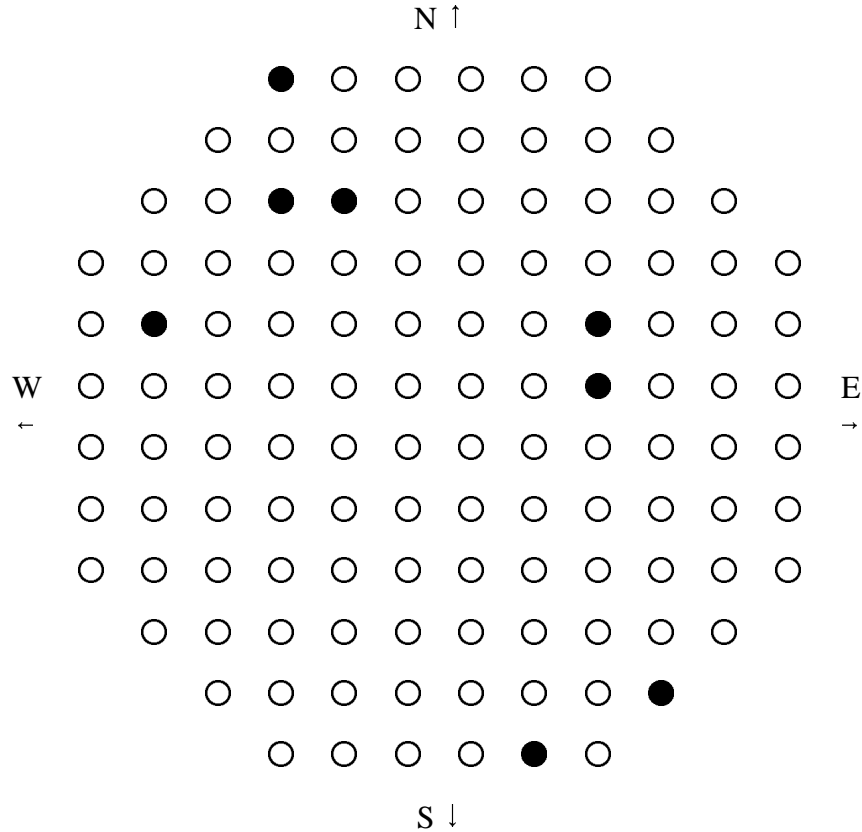


Figure 3. Representation of the 120-transducer phased-array Doppler sodar antenna. Functional transducers are depicted by ○ while nonfunctional transducers are depicted by ●.

Figure 4 contains a set of vista photographs of the Carrizo Plain site taken from the tower towards eight cardinal points of the compass (north, northeast, east, southeast, south, southwest, west, northwest). The left and right photographs of the first row are views of the north and northeast, respectively. The second row displays views of the east and southeast, the third row shows the south and southwest, and the final row is of vista towards the west and northwest.



Figure 4. Carrizo Plain vista photos.